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Mode-coupling in Upper-hybrid Turbulence: Vlasov Simulations A.S. SHARMA, A. NAJMI, University of Maryland, College Park, MD, B. ELIAS-SON, University of Strathclyde, Glasgow, UK, X. SHAO, G. MILIKH, K. PA-PADOPOULOS, University of Maryland, College Park, MD — Turbulence in a magnetized plasma near the upper-hybrid frequency involves coupling among the upper hybrid, electron Berstien and lower-hybrid waves, and the interactions are dominantly by parametric coupling and strong turbulence. These processes in the case of turbulence excited by high intensity electromagnetic waves in a density cavity are simulated using a Vlasov code. In the three-wave processes the upper hybrid wave excited by the external pump wave undergoes parametric decay in two decay processes. In the first decay mode, which is excited when the amplitudes of the waves trapped in the density cavity reaches a threshold, the upper hybrid wave decays in to another upper hybrid wave and a lower-hybrid wave. Sudsequently in a second decay mode parametric coupling into electron Bernstein and lower-hybrid waves are excited. In the four-wave process modulational (oscillating two-stream) instability of the upper hybrid waves, leads to wave collapse and strong turbulence. The simulations correspond to ionospheric heating experiments, which provide a unique and natural laboratory for the study of plasma turbulence.

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